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MARSHALL, GERSTEIN & BORUN LLP
6300 SEARS TOWER
233 S. WACKER DRIVE
CHICAGO, IL 60606

EXAMINER

FRANK, ELLIOT L

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2125

DATE MAILED: 02/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

2

Office Action Summary

Applicati n N .

10/085,439

Applicant(s)

ERYUREK ET AL.

Examiner

Elliot L Frank

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21,23-34,39-57,59,62-69 and 71-76 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 39-41,52,54,75 and 76 is/are allowed.
- 6) ☒ Claim(s) 1-21,23-34,42-51,53,55-59,62-69 and 71-74 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED FINAL ACTION

Response to Amendment

1. The following FINAL office action is a response to applicant's Amendment (A) filed on 02 February 2004
2. Corrections or explanations in regard to problems indicated in item 1-3 of the prior office action have been considered and are accepted.
3. Claims 1-21,23-34,39-57,59,62-69 and 71-76 are pending in the office action.
 - a. Claims 22, 35-38,58,60,61 and 70 have been cancelled.
 - b. Claims 1,39,50,52,54 and 62 are amended.
 - c. Claims 75 and 76 have been added by amendment and are now considered.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

5. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29,

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2000. Therefore, the prior art date of the reference is determined under 35 U.S.C.

102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claim 1-10,19-21,42,43,49-51,53,55-57,59 and 62 are rejected under 35 U.S.C. 102(e) as being anticipated by Pyotsia et al. (USPN 6,317,701 B1).

The limitations of the aforementioned claims, and the relevant limitations in Pyotsia et al., are as follows:

1. A method of monitoring an entity within a process plant (column 1, lines 4-5) comprising:

collecting data pertaining to the operation of the entity while the entity is in operation (column 4, lines 36-55);

transmitting the collected data to an index computation device (column 6, lines 26-38);

creating a use index from the collected data, wherein the use index represents status information regarding at least on an entity performance, an entity utilization or an entity variability (column 6, lines 1-25); and

storing the use index in a database (column 5, lines 50-67).

Method claim 50 has the same functional limitations as claim 1 in a plural form. System claim 62 has the same functional limitations as claim 1. These claims are therefore anticipated by the same citations in Pyotsia et al.

2. The method of claim 1, wherein the collected data includes maintenance and process data (column 6, lines 1-8).

3. The method of claim 1, wherein the collected data includes diagnostic data pertaining to the entity (column 6, lines 19-26).

4. The method of claim 1, wherein the collected data includes on-line monitoring data pertaining to the entity (column 6, lines 39-51).

5. The method of claim 1, wherein the process plant includes a process control system having a control strategy, the method further comprising the steps of: providing the use index to the process control system; and changing the control strategy based on the use index (column 3, lines 20-36).

6. The method of claim 1, further comprising the steps of: providing the use index to a process control application; and changing a process control parameter based on the use index (column 3, lines 20-36).

7. The method of claim 1, wherein the process plant includes a maintenance system having a maintenance function, the method further comprising the steps of: providing the use index to the maintenance system; and changing the maintenance function based on the use index (column 3, lines 20-36).

8. The method of claim 1, further comprising the step of executing a decision within the process plant based on the use index (column 3, lines 20-36).

9. The method of claim 8, wherein the step of executing a decision comprises analyzing the entity (column 6, lines 52-64).

10. The method of claim 8, wherein the step of executing a decision comprises analyzing an aspect of the process plant other than the entity (column 2, lines 43-55).

19. The method of claim 1, wherein the use index is a performance index indicating the relative performance of the entity (column 6, lines 9-17).

20. The method of claim 1, wherein the use index is a variability index indicating an amount of deviation of a parameter of the entity (column 6, lines 39-51 wherein "error" is recited).

21. The method of claim 1, wherein the use index is a utilization index indicating a degree of exploitation of the entity (column 6, lines 39-51 wherein "odometer" is recited).

42. The method of claim 1, wherein the entity includes a plurality of lower level entities, the method further comprising the steps of: creating a lower level model for at least one of the lower level entities; and simulating the operation of the at least one lower level entity based on the lower level model to provide data pertaining to the operation of the at least one lower level entity (column 2, line 65-column 3, line 13).

43. The method of claim 42, further comprising the step of creating a lower level use index for each of the plurality of lower level entities based on the data pertaining to the operation of the at least one lower level entity, and wherein the step of creating a use index for the entity comprises combining the lower level use indices (column 2, line 65-column 3, line 13).

49. The method of claim 45, wherein the device is one of a two-wire device, a three-wire device, a four-wire device, a wireless device, a device having a processor, a variable speed driver, a controller, a multiplexer, rotating equipment, an

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actuator, power generation equipment, power distribution equipment, a transmitter, a sensor, a control system, a transceiver, a valve, a positioner, a switch, electrical equipment, a server, a hand held device, a pump, an I/O system, a smart field device, a non-smart field device, a HART protocol device, a Fieldbus protocol device, a PROFIBUS protocol device, a WORLDFIP protocol device, a Device-Net protocol device, a AS-Interface protocol device, a CAN protocol device, a TCP/IP protocol device, an Ethernet device, an internet-based device, and a network communication device (column 4, lines 1-35).

51. The method of claim 50, wherein the plurality of entities together comprise a higher level entity, the method further comprising the step of combining the use indices of the plurality of entities to provide a higher level use index for the higher level entity (column 2, line 65-column 3, line 13).

53. The method of claim 50, wherein at least one of the plurality of entities includes a plurality of lower level entities, the step of collecting data includes collecting data pertaining to the operation of each of the plurality of lower level entities while each of the lower level entities is in operation, and the step of creating a use index for each of the plurality of entities includes: creating a lower level use index for each of the plurality of lower level entities based upon the collected data; and combining the lower level use indices to provide the use index for the at least one of the plurality of entities (column 2, line 65-column 3, line 13).

55. The method of claim 53, wherein the lower level use index is a performance index indicating the relative performance of the lower level entity (column 6, lines 9-17).

56. The method of claim 53, wherein the lower level use index is a variability index indicating an amount of deviation of a parameter of the lower level entity (column 6, lines 39-51 wherein "error" is recited).

57. The method of claim 53, wherein the lower level use index is a utilization index indicating a degree of exploitation of the lower level entity (column 6, lines 39-51 wherein "odometer" is recited).

59. The method of claim 50, wherein the step of creating a use index comprises creating the use index within a device, wherein the device is one of a field device and field equipment (column 2, lines 30-41).

The limitations of the aforementioned claims are recited in entirety in Pyotsia et al.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 11-14 rejected under 35 U.S.C. 103(a) as being unpatentable over Pyotsia et al. (USPN 6,317,701 B1).

Claims 11-14 depend from claim 1. Claim 61 depends from claim 50. Claims 1 and 50 have been shown to be anticipated by Pyotsia et al.

Claims 11-14 require the following control related functions:

11. The method of claim 8, wherein the step of executing a decision comprises initiating an automated process.

12. The method of claim 8, wherein the step of executing a decision comprises initiating corrective measures.

13. The method of claim 8, wherein the step of executing a decision comprises optimizing control of the entity.

14. The method of claim 8, wherein the step of executing a decision comprises adjusting a parameter of the entity.

It would have been obvious to one of ordinary skill in the art at the time the invention was made based on Pyotsia et al. column 3, lines 20-39 wherein automatic control is discussed and column 7, lines 15-49 wherein the ability to transfer data to a centralized learning module is described that the Pyotsia et al. system was used to make decisions on various aspects of a controlled process and could have been expanded to adjust parameters of the process based on its ability to communicate to other systems electronically (also described at column 7, lines 15 to 49) depending on the requirements of the application being controlled.

It would have been obvious to one of ordinary skill in the art at the time the invention was made that the limitations of claim 61 would be met by a system that repeatedly polls a field device and updates the system information when a new

condition is detected. Pyotsia fulfills this requirement at column 5, lines 23-39 wherein it describes the polling method for gathering information from the field devices.

9. Claims 15-18,63 and 64 rejected under 35 U.S.C. 103(a) as being unpatentable over Pyotsia et al. (USPN 6,317,701 B1) in view of Kunugi (USPN 5,880,716 A).

Claims 15-18 depend from claim 1. Claims 63 and 64 depend from claim 62. Claims 1 and 62 have been shown to be anticipated by Pyotsia et al.

While Pyotsia et al. does recite a system for controlling industrial field devices based on a calculated index for each device, it does not specifically mention the additional display features required by the previously indicated claims.

Kunugi, analogous to Pyotsia et al. in that both systems are used for the monitoring and control of industrial devices (Kunugi, column 1, lines 5-9), reads on the additional limitations of claims 15-18,63 and 64 as follows:

15. The method of claim 1, further comprising the step of creating a representation of the entity on a display (column 3, lines 15-34).

16. The method of claim 15, further comprising the step of displaying the representation of the entity with the use index on the display (column 12, lines 21-26).

17. The method of claim 1, further comprising the step of displaying a description corresponding to the use index, wherein the description is indicative of the status information regarding the entity (column 8, lines 37-44).

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18. The method of claim 17, further comprising the step of analyzing the use index to provide the description (column 8, lines 25-32).

63. The system of claim 62, further comprising a third routine adapted to be executed by the processor which displays a description corresponding to at least one use index, wherein the description is indicative of status information regarding one of the plurality of entities (column 8, lines 37-44).

64. The system of claim 63, further comprising a fourth routine adapted to be executed by the processor which analyzes the at least one use index to provide the description (column 8, lines 25-32).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the features of Kunugi into the Pyotsia et al. system to have allowed a plant system to be displayed on a screen along with the operating conditions of various plant equipment and devices to have facilitated the monitoring of the operating conditions of the equipment and devices (Kunugi, column 12, lines 28-37).

10. Claims 23-29, 44 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pyotsia et al. (USPN 6,317,701 B1) in view of Bonaquist et al. (USPN 5,329,443 A).

Claims 23-29, 44 and 47 depend from claim 1. Claim 1 has been shown to be anticipated by Pyotsia et al.

While Pyotsia et al. does recite a system for controlling industrial field devices based on a calculated index for each device, it does not specifically mention the additional modeling and calculation features required by the previously indicated claims.

Bonaquist et al., analogous to Pyotsia et al. in that both systems are used for the monitoring and control of process devices (Bonaquist et al., column 1, lines 10-31), reads on the additional limitations of claims 23-29,44 and 47 as follows:

23. The method of claim 1, wherein the use index is a performance index and the step of creating the performance index comprises: modeling the entity based on the collected data to provide one or more estimated parameters of the entity; comparing the one or more measured parameters to a threshold; and producing a performance index value based on the step of comparing (column 3, line 54-column 4, line 14).

24. The method of claim 23, further comprising the step of performing a regression analysis using the one or more measured parameters to determine an unknown parameter associated with the entity (column 9, lines 51-68).

25. The method of claim 23, further comprising the step of modeling the entity based on predetermined data to produce the threshold, wherein the threshold comprises a baseline performance of the entity (column 4, lines 15-35).

26. The method of claim 23, wherein the performance index is an efficiency measurement of the entity (column 1, lines 10-31, wherein efficiency is considered when controlling a device).

27. The method of claim 1, wherein creating a use index comprises predicting the use index from the collected data, wherein the use index represents predicted status information regarding the entity (column 7, lines 36-50).

28. The method of claim 1, wherein the use index is a variability index and the step of creating the variability index comprises: analyzing the collected data to determine a statistical value associated with a parameter of the entity; and comparing the statistical value to a predetermined threshold (column 11, lines 7-25).

29. The method of claim 28, wherein the predetermined threshold is one of an expected amount of variation in the parameter of the entity and a desired amount of variation in the parameter (column 11, lines 34-64).

44. The method of claim 42, wherein the at least one lower level entity includes at least two lower level entities each having an associated lower level model, the method further comprising the steps of: interconnecting the lower level models of the at least two lower level entities to create a model of the entity; and simulating the operation of the entity based on the model of the entity to provide the data pertaining to the operation of the entity (column 3, line 54-column 4, line 14).

47. The method of claim 45, wherein creating a use index comprises creating a use index a first time and creating a use index a second time, the method further comprising the steps of: recognizing a change in the use index between the first and second time; and automatically reporting the change to a centralized database (column 3, line 54-column 4, line 14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have integrated the methodology of Bonaquist et al. into the Pyotsia system to have improved the closed loop stability of the process under control (Bonaquist et al., column 4, lines 60-68).

11. Claims 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pyotsia et al. (USPN 6,317,701 B1) in view of Kraft (USPN 5,528,510 A).

Claims 30-34 depend from claim 1. Claim 1 has been shown to be anticipated by Pyotsia et al.

While Pyotsia et al. does recite a system for controlling industrial field devices based on a calculated index for each device, it does not specifically mention the additional utilization monitoring features required by the previously indicated claims.

Kraft, analogous to Pyotsia et al. in that both systems are used for the monitoring and control of industrial devices (Kraft, column 1, lines 9-12), reads on the additional limitations of claims 15-18, 63 and 64 as follows:

30. The method of claim 1, wherein the use index is a utilization index and the step of creating the utilization index comprises: establishing a predetermined amount of use for the entity; analyzing the collected data to provide an actual amount of use; comparing the actual amount of use to the predetermined amount of use; and producing a utilization index value based on the step of comparing (column 1, line 56 – column 2, line 10).

31. The method of claim 30, wherein the predetermined amount of use is one of a utilization capacity of the entity and a desired utilization of the entity (column 6, lines 25-33).

32. The method of claim 30, wherein the step of creating the use index comprises determining a ratio of the measured use to the predetermined amount of use (column 6, lines 25-33).

33. The method of claim 30, wherein the step of creating the use index comprises determining the difference between the measured use and the predetermined amount of use (column 5, lines 17-34).

34. The method of claim 30, wherein the step of creating the use index comprises determining a percentage of the predetermined amount of use (column 6, lines 25-33).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the features of Kraft into the Pyotsia et al. system to have provided an accurate method for tracking both machine utilization and process performance (Kraft, column 1, line 56-column 2, line 4).

12. Claims 65-69, 71, 73 and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pyotsia et al. (USPN 6,317,701 B1) in view of Miyagaki et al. (USPN 4,942,514).

Claims 65-69, 71, 73 and 74 depend from claim 62. Claim 62 has been shown to be anticipated by Pyotsia et al. Claims 67-72 have the same functional limitations as

claims 19-22, 43 and 18 respectively. Therefore, claims 67-72 are rejected as being obvious in view of the same citations in Pyotsia et al.

While Pyotsia et al. does recite a system for controlling industrial field devices based on a calculated index for each device, it does not specifically mention the additional hierarchical display features required by claims 65,66,73 and 74 as follows:

65. The system of claim 62, further comprising: a third routine adapted to be executed by the processor which combines the use indices of the representations in the set to provide a higher level use index for a higher level entity; and a fourth routine adapted to be executed by the processor which displays a representation of the higher level entity and which displays the higher level use index displayed proximately to the higher level entity.

66. The system of claim 65, wherein the representation of the higher level entity comprises the display of the set of the representations.

Miyagaki et al., analogous to Pyotsia et al. in that both systems are used for the monitoring and control of process plant and industrial devices (Miyagaki et al., column 1, lines 6-11), reads on the additional limitations of aforementioned claims in figures 1A and 1B and column 3, lines 35-68 wherein an plant control system display with hierarchical overview features is described.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the elements of Miyagaki into the Pyotsia et al. system to have provided an operator interface system that is both safe and easy

to operate which in turn would display the content of operation or control data at a control device and the operating condition of the control device displayed in combination in a manner so as not to hide the control device on a display screen important for operation (Miyagaki et al., column 1, lines 54-64).

13. Claim 72 rejected under 35 U.S.C. 103(a) as being unpatentable over Pyotsia et al. (USPN 6,317,701 B1) in view of Miyagaki et al. (USPN 4,942,514) as applied to claim 71 above, and further in view of Kunugi (USPN 5,880,716 A).

Claim 72 depends from claim 71. Claim 71 has been shown to be obvious in view of the combination of Pyotsia et al. and Miyagaki et al.

The previously indicated combination does not specifically read on the limitations of claim 72 as follows:

72. The system of claim 71, further comprising a sixth routine adapted to be executed by the processor which performs a data analysis of the higher level use index to provide the description.

Kunugi, analogous to the combined references in that all of the systems are used for the monitoring and control of industrial devices (Kunugi, column 1, lines 5-9), reads on the additional limitations of claim 72 at column 8, lines 25-32 wherein the system collates the operating conditions of the devices and displays them on an operator interface screen.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the features of Kunugi into the combined

Pyotsia et al. and Miyagaki et al. system to have allowed a plant system to be displayed on a screen along with the operating conditions of various plant equipment and devices to have facilitated the monitoring of the operating conditions of the equipment and devices (Kunugi, column 12, lines 28-37).

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Response to Arguments

15. Applicant's arguments filed 02 February 2004 have been fully considered but they are not persuasive.

- a. The applicant's primary argument in regard to both the performance index and the maintenance need index is that the office action misinterprets the Pyotsia et al. system. The applicant submits that the prior art creates an index representing the performance of the full process and not the actual field device. The examiner respectfully disagrees.

- b. The Pyotsia et al. system “gives the user a clear picture of the operation and condition of the valve” (column 6, line 53). The performance index is created from “static error, rate of change in static error, dynamic error, rate of change in dynamic error, opening accumulation, load and rate of change in load”, while the maintenance need index is derived from, “control performance, odometer of valve, odometer of actuator, number of valve reversals, valve seal leakage, valve emission, valve wall thickness, cavitation level, load and rate of change of load.” (column 6, line 44). The values making up these indexes can only be device centric, not process centric. For example, opening accumulation or valve wall thickness cannot be interpreted at the process level, therefore, these values must be recorded specifically on a device to device basis. For the aforementioned reasons, the examiner maintains the indexes of Pyotsia et al. are indeed describing the performance of field devices.
- c. Since all of the above device characteristics have been deemed to be device centric, the specific characteristics related to device variability, such as the error terms which demonstrate variability, and utilization which is in part represented by odometer of the valve are also considered to be read in Pyotsia et al.
- d. The examiner further maintains that the cited characteristics are representative of the required measurements of device performance. For example, the odometer reading of the device directly contributes to the

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maintenance index, which at a certain level can indicate when device maintenance is required (column 6, line 63). Therefore, the claim requirement is deemed to be read in the prior art of record.

- e. The applicant cites column 6, lines 9-12 for support, which reads, "The control performance index is a key when estimating the operation of a control valve from the viewpoint of the whole industrial process." This citation merely describes how the index may be used in the control of the overall process, not how the index was derived. The performance index may include application based data, however, this is optional requirement of Pyotsia et al. that does not impact the broadest most reasonable interpretation of the prior art.
- f. Applicant's arguments in respect to claims 75 and 76 have not been treated due to the indicated allowability of the claims.

16. Based on the response to the applicant's arguments, the rejections are maintained in view of the prior art of record.

Allowable Subject Matter

17. Claims 39-41, 52, 54, 75 and 76 are allowed.

Specifically, all of the above claims include assigning a lower level index value to subordinate devices and creating an overall index by assigning a weighting value to each of the lower level entities which is used to create a weighted average and weighted combination of all of the lower level entities.

The most relevant prior art of record is Pyotsia et al. Pyotsia et al. reads on the combination of subordinate device level index values in process monitoring, but does not recite weighting these indexes in order to derive a plant level index. No other prior art of record, alone or in combination with Pyotsia et al., make obvious this feature.

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

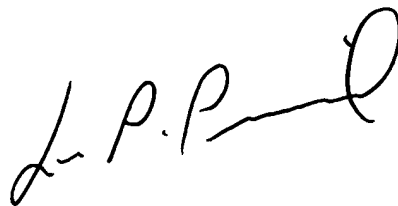
19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elliot L Frank whose telephone number is (703) 305-5442. The examiner can normally be reached on M-F 7-4:30, 1st Friday off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P Picard can be reached on (703) 308-0538. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ELF
February 13, 2004

A handwritten signature in black ink, appearing to read 'L. P. Picard', with a stylized flourish at the end.

LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100